

In the Claims:

Please **CANCEL** Claims 13-22

5 Please **ADD** the following claims:

23. An integrated circuit structure formed at the surface of a substrate,  
comprising:
- a plurality of shallow trenches formed in the surface of the  
substrate;
  - a nitrogen doped insulating liner grown on sidewalls of the shallow  
trenches;
  - a gap filling insulating material filling the shallow trenches level with  
the surface of the substrate; and
  - a plurality transistors formed in the surface of the substrate in  
regions between said shallow trenches, wherein each of said  
transistors include a source and a drain formed by diffusing an  
impurity species into the surface of said substrate, wherein said  
nitrogen doped insulating liner acts as a stop to prevent said  
impurity species from diffusing into said substrate from said gap  
filling insulating material.

24. The integrated circuit structure of claim 23 wherein the nitrogen doped insulating liner is formed by treating the sidewalls with an oxygen rich atmosphere followed by a nitrogen compound selected from the group of nitrogen compounds consisting of nitrogen ( $N_2$ ) gas, ammonia ( $NH_3$ ), nitric oxide ( $NO$ ), and nitrous oxide ( $N_2O$ ).
25. The integrated circuit structure of claim 24 wherein the oxygen rich atmosphere is selected from the atmospheres consisting of steam and oxygen gas.
26. The integrated circuit structure of claim 24 wherein the treating of the sidewalls of the shallow trenches with the oxygen rich atmosphere of the shallow trenches is at a temperature from approximately  $900^\circ C$  to approximately  $1000^\circ C$ , at a pressure of from approximately 600 Torr to approximately 760 Torr, for a period of time from 60 minutes to 120 minutes.
27. The integrated circuit structure of claim 26 wherein the treating the internal surfaces of the shallow trenches with the nitrogen compounds is at a temperature of from approximately  $900^\circ C$  to approximately  $1000^\circ C$  at a pressure of from approximately 600 Torr to approximately 760 Torr for a period of time of from approximately 30 minutes to approximately 90 minutes.

28. The integrated circuit structure of claim 24 wherein the nitrogen doped insulating liner is formed by exposing the sidewalls of said shallow trenches to a nitrogen rich and oxygen rich atmosphere thermally to grow a silicon oxynitride layer on said sidewalls.
29. The integrated circuit structure of claim 28 wherein the nitrogen rich and oxygen rich atmosphere is at a temperature of from approximately 900 °C to approximately 1000 °C, and at a pressure of from approximately 600 Torr to approximately 760 Torr for a period of from approximately 120 minutes to approximately 180 minutes.
30. The integrated circuit structure of claim 28 wherein the nitrogen rich and oxygen rich atmosphere includes nitrogen compounds selected from the set of nitrogen compounds consisting of nitrogen (N<sub>2</sub>) gas, ammonia (NH<sub>3</sub>), nitric oxide (NO), and nitrous oxide (N<sub>2</sub>O) and oxygen rich compounds selected from the set of oxygen rich compounds consisting of steam (H<sub>2</sub>O) and oxygen (O<sub>2</sub>).
31. The integrated circuit structure of claim 23 wherein the nitrogen doped insulating liner has a thickness of from approximately 10 nanometers to approximately 30 nanometers.
32. The integrated circuit structure of claim 23 wherein the gap fill insulating material is selected from insulating materials consisting of CVD formed silicon oxide and spun-on-glass silicon dioxide.